Professor Larry Ukeiley

1. **State of Florida – Florida Center for Advanced Aero-Propulsion Technologies**
   $376,500

This was funded through the Florida Board of Governor's Center of Excellence program and is a broad multi-university center related to Aerospace Engineering. As part of this program we have developed infrastructure and augmented existing research efforts associated with Aerospace Engineering at the University of Florida. There has been no direct application to any specific products such as drones. For example I am currently using FCAAP funds to cover a student who is working on control of supersonic flows over open cavities.

2. **Navy – Novel method to predict circulation control noise**

$77,500

This work has nothing to do with drones. The research involves developing models to allow for the prediction of noise generated from circulation control hydrofoils. Circulation control air and hydofoils augment lift through blowing around the trailing edge of thick rounded airfoil. These devices have been shown to significantly increase lift however they tend to be loud due to the blowing. The work entitles developing methods to understand where an how the flow generates the noise being propagated to the far field.

3. **Air Force – Characterization of the time-dependent fluid-structure interaction and passive flow control of low Re, $177,882**

I do not think this work has anything to do with drones. The research involves measuring the fluid-structure interactions on membrane wings. It is inspired by the advantages seen by using flexible surfaces in Micro Air Vehicle desingn. In this work we are trying to examine how we can tune the membrane characteristics in a manner to have the most aerodynamically beneficial characteristics. Specifically, we are trying to tune the membranes vibrations to fundamentally important frequencies (wake and shear layer instabilities) for low Reynolds number flows over flat plate wings.

4. **Air Force – Investigations of fundamental fluid mechanics for munitions airframe sciences, $60,000**

I do not think this work has anything to do with drones. The research involves measuring the flow field over a low aspect ratio flat plate doing a pitch up maneuver. Specifically, we trying to develop a better understanding of the formation and evolution of the leading edge vortex while an airfoil goes through a dynamic motion. Additionally since we are conducting this study with an aspect ratio 2 wing we should be able to examine the interaction between the leading edge and tip vortices which have been shown to lead to improved lift characteristics.

5. **Air Force – Biologically-inspired anisotropic flexible wings for optimal flapping flight, $425,001**

I do not think this work has anything to do with drones. As part of this program we have been trying to understand the role of flexibility in force generation from flapping wings. The program has not been geared towards developing a flapping flyer but more towards a fundamental understanding how we can use flexibility to augment force generation in simple kinematic flapping motions.